

# (12) United States Patent

# Ghirardello et al.

## (54) UNIT FOR STERILIZING A WEB OF PACKAGING MATERIAL FOR A MACHINE FOR PACKAGING POURABLE FOOD **PRODUCTS**

(75) Inventors: Roberto Ghirardello, Carpi (IT);

Danilo Veroni, Rubiera (IT);

Alessandro Veronesi, Limidi Di Soliera (IT); Robert Bartolini, Guiglia (IT); Daniele Apparuti, Montale Rangone (IT); Renzo Bellei, Modena (IT)

Assignee: TETRA LAVAL HOLDINGS &

FINANCE S.A., Pully (CH)

Subject to any disclaimer, the term of this Notice:

patent is extended or adjusted under 35

U.S.C. 154(b) by 113 days.

(21) Appl. No.: 14/238,399

(22) PCT Filed: Aug. 29, 2012

(86) PCT No.: PCT/EP2012/066758

§ 371 (c)(1),

(2), (4) Date: Feb. 11, 2014

(87) PCT Pub. No.: WO2013/045192

PCT Pub. Date: Apr. 4, 2013

(65)**Prior Publication Data** 

> US 2014/0199215 A1 Jul. 17, 2014

(30)Foreign Application Priority Data

Sep. 30, 2011 (EP) ...... 11183645

(51) Int. Cl.

A61L 2/18 (2006.01)(2006.01)B65B 55/10

(52) U.S. Cl.

CPC A61L 2/18 (2013.01); B65B 55/103 (2013.01)

(58) Field of Classification Search

CPC ...... A61L 2/18; B65B 55/103 See application file for complete search history.

(10) **Patent No.:** 

US 9,408,932 B2

(45) Date of Patent: Aug. 9, 2016

#### (56)References Cited

#### U.S. PATENT DOCUMENTS

6,354,061 B1\* 3/2002 Bellei ...... B65B 55/103 6.502.327 B2\* 1/2003 Kume ...... B65B 55/103 34/399

(Continued)

### FOREIGN PATENT DOCUMENTS

2007203131 B2 7/2007 CH511 150 A 8/1971 (Continued)

#### OTHER PUBLICATIONS

International Search Report (PCT/ISA/210) mailed on Nov. 13, 2012, by the European Patent Office as the International Searching Authority for International Application No. PCT/EP2012/066758. (Continued)

Primary Examiner — Regina M Yoo (74) Attorney, Agent, or Firm — Buchanan Ingersoll & Rooney PC

#### ABSTRACT (57)

There is described a unit for sterilizing a web of packaging material advanced along a given path, having, along a longitudinal portion thereof, a succession of pre-applied opening devices and adapted to be transformed in a plurality of sealed packages containing a pourable food product; the unit comprises a bath, containing a sterilizing agent in which the web with the opening devices is advanced, and an aseptic chamber connected to an outlet of the bath and housing drying mechanism for removing residual sterilizing agent from the web; the drying mechanism comprise an ejector located at a distance from the outlet of the bath and configured so as to direct a stream of air transversally to the web and onto the longitudinal portion of the web provided with the opening devices.

### 18 Claims, 5 Drawing Sheets

